

culture, Mr. E. H. Forbush was able to visit the several States in which the Starling has become established, and by personal investigation as well as by correspondence, to secure much historic and economic information concerning the bird, which is here presented. The first successful introduction of the Starling in America seems to have been in 1890, when Eugene Schieffelin liberated 120 birds in Central Park, New York City. The species has now spread over Long Island, New Jersey, Connecticut, and eastern Pennsylvania, although still most abundant in the vicinity of New York; while it has been reported from Odessa, Del.; Springfield, Mass.; Rhinebeck, N. Y., and Millersville, Pa.

As to the relation of the Starling to our native birds Mr. Forbush finds that it drives away such birds as Flickers, Bluebirds and House Wrens, by occupying their nesting places, while it competes actively with our birds for their food supply. In winter especially the flocks of Starlings scour the country so thoroughly, that they must devour most of the supply of food upon which our winter birds are accustomed to subsist. Furthermore, as Mr. Forbush says, "the Starling can give no service that cannot be equally well performed by our own Blackbirds, Meadowlarks, Bobolinks, Sparrows and other birds," while it has already "begun to show a capacity for harmfulness which may be expected to become more prominent as its numbers increase." Accounts of the great damage inflicted upon berry patches and vineyards in Europe, give us some idea of what we may expect from the unfortunate introduction of this undesirable bird.—W. S.

#### **Strong on the Olfactory Organs and the Sense of Smell in Birds.<sup>1</sup>**

— Dr. Strong's investigations here presented were of two kinds, morphological and experimental. The former consisted of the study and dissection of the heads of sixty-five species representing twenty-seven of the thirty-five orders of existing birds; the material being for the most part that contained in the Senckenbergisches Neurologisches Institute at Frankfort-am-Main, Germany, where every facility was extended to the author by the director, Prof. Ludwig Edinger.

These studies gave evidence that (1) the olfactory organs of birds are of too great size to be set aside as non-functional, but that (2) there is a tendency in the bird series toward retrogression in these organs. In the Emu and Fulmar the olfactory lobes were found to be of relatively great size while in the Corvidæ they are surprisingly minute.

Dr. Strong's experimental work consisted mainly of experiments upon Ring Doves in a covered enclosure with four similar accessory chambers communicating with it. These were so constructed that food placed in them was not visible from the main chamber, and by aid of glass tubes and suitable apparatus air currents could be created from any of the accessory chambers which could be charged with odors as desired.

<sup>1</sup> On the Olfactory Organs and the Sense of Smell in Birds. By R. M. Strong. From the Hull Zoological Laboratory, University of Chicago. *Journal of Morphology*, XX, No. 3, September, 1911, pp. 619-658, pl. i-ii and figs. a-d.

The birds were first trained to search for food indiscriminately in the various chambers, and then developing an odor in the chamber containing the food record was kept as to whether or not the bird entered this chamber in preference to any of the others. The experiments were repeated a number of times and with different odorous materials. Although the birds never learned to find their food with perfect accuracy, it was evident that they were guided to some extent by at least one of the materials used; the percentage of correct entrances being notably larger than would have been expected according to the law of error.

Dr. Strong concludes that birds have a sense of smell, which in some species at least is more acute than in man. He agrees with Turner that the development of keen vision in birds is being accompanied by a degeneration of the olfactory sense, and further suggests that a mutual relation between the olfactory and visual senses may exist, which makes it very difficult for a bird to react to an olfactory stimulus only.

The literature of the subject is considered but in the case of published field observations the author says the chances of error in interpretation are so great that they have little value.

Dr. Strong has made a welcome contribution to a much mooted question, and has started a line of investigation which may be followed with profit by others. With a clear understanding of the difficulties as set forth by him and a constant check on unwarranted inference, it would seem that field observations of real value should be possible.—W. S.

**Lowe's 'A Naturalist on Desert Islands.'**<sup>1</sup>—The author here presents an account of visits to some of the remote and unfamiliar islands of the Caribbean Sea—Swan Island, Blanquilla and The Hermanos. The physical features of the islands, their inhabitants, their geological history and the origin of their fauna and flora are treated entertainingly along with the narrative of the voyage, making an interesting and readable volume. The ornithological results of the cruise have already been published elsewhere, but many observations on bird-life are given here in a more popular and detailed manner. Among the illustrations are photographs of Boobies and Frigate Birds and several maps.—W. S.

**Lechner's 'Oologia Neerlandica.'**—Part I of this work,<sup>2</sup> which was announced in the July Auk, is now at hand. It comprises text for sixty-

<sup>1</sup> A Naturalist | on Desert Islands | By | Percy R. Lowe, B. A., M. B. (Cantab.) | Member of the British Ornithologists' Union | With thirty-two plates and three maps | Witherby & Co. | 326 High Holborn, London | 1911 — 8vo, pp. xii + 300. 7s. 6d. net.

<sup>2</sup> Oologia Neerlandica | Eggs | of | Birds | Breeding in the Netherlands | By | A. A. Van Pelt Lechner | Member of the Board of the "Nederlandsche Ornithologische Vereeniging" | (Netherlands Ornithological Society) | With colored plates made direct from specimens | in the author's collection | vignette | The Hague | Martinus Nijhoff | 1911. Small 4°. 250 copies printed of which 100 are in English. Part I, (Sept., 1911) comprises Plates 1-10, 12, 13, 15, 16, 20, 23, 25, 27-29, 33-35, 37, 39-44, 46, 47, 76, 83, 84. Price £1.10 net.